

REMARKS

Initially, Applicants would like to thank the Examiner for his indication in the outstanding Official Action of the allowable subject matter in claims 2-18. Applicants would also like to thank the Examiner for his acknowledgment of the claim for foreign priority under 35 U.S.C. §119, as well as for his acknowledgment of receipt of a certified copy of all of the priority documents.

In the outstanding Official Action, claims 1-20 were rejected under 35 U.S.C. §112, second paragraph, as indefinite. Claims 1, 19 and 20 were rejected under 35 U.S.C. §103(a) over AMR (U.S. Patent No. 5,595,068) in view of LARSSON (U.S. Patent No. 6,131,653). Claims 2-18 were objected-to for being dependent on a rejected independent claim, but were otherwise indicated as allowable if revised to overcome the rejections under 35 U.S.C. §112, second paragraph, and if rewritten to include the features of base and intervening claims.

Upon entry of the present amendment, claims 17-20 will have been cancelled without prejudice to or disclaimer of the subject matter recited therein. Claims 1-5, 7-12 and 14-16 will have been amended to eliminate informalities, and to ensure that the pending claims are not interpreted as reciting “means plus function” features. Claims 21-36 will have been added for consideration by the Examiner. In this regard, claims 21-36 have been drafted to ensure that no informalities are present, as well as to ensure that the pending claims are not interpreted as reciting “means-plus-function” features. Applicants submit that claims 1-16 and 21-36 are definite under 35 U.S.C. §112, second paragraph. In this regard, claim 1 has

been revised and claim 21 has been drafted to ensure that each element recited therein is provided with proper antecedent basis, where appropriate. However, Applicants note that terms such as "external air" and "room air" cannot properly be introduced into a claim with an introductory term such as "a" or "an" (since the air is not part of the claimed invention), and accordingly are introduced into the claims initially without an introductory term such as "a" or "an".

Applicants submit that claims 1 and 21 are allowable under 35 U.S.C. §102 and 35 U.S.C. §103. In this regard, Applicants would initially like to describe an exemplary embodiment of the invention, as described in Applicants' specification. The invention recited in claims 1 and 21 can be used not just to heat or cool the air in a room, but also to ventilate the air in the room as needed. In this regard, an air supply duct (element 200 in the exemplary embodiment) guides external air to the room. The air supply duct provides the external air to a first guide (element 31 in the exemplary embodiment) of a guide apparatus that guides the external air to the room through a fan (element 20 in the exemplary embodiment). The external air that is guided to the room is discharged to the room through an indoor heat exchanger (element 10 in the exemplary embodiment). The indoor heat exchanger has a space defined therein that is in communication with a room, and a fan in the space that draws air in and that discharges air to the room through the indoor heat exchanger. The first guide is provided on an underside of the indoor heat exchanger so that air is

provided to the fan and then discharged to the room through the indoor heat exchanger. (See e.g. Fig. 5)

A second guide (element 35 in the exemplary embodiment) of the guide apparatus is provided on the underside of the indoor heat exchanger and guides room air from the room to an air discharge duct (element 300 in the exemplary embodiment). A preheat exchanger (element 40 in the exemplary embodiment) is arranged adjacent to and in communication with the guide apparatus (first and second guides), and indirectly exchanges heat of external air (entering the room) and the room air (leaving the room). Accordingly, heat loss or gain from the room is minimized, when appropriate, as the air in the room is ventilated with external air.

In contrast to the invention recited in claims 1 and 21, AMR is directed to a ceiling mounted indoor unit 10 that includes an enclosure 20 provided in a space 36 located between a true ceiling 42 and a false ceiling 41. A primary fan suction inlet 31 is provided on a bottom wall 21 of the enclosure 20. Further, a discharge outlet 32 is provided on the bottom wall 21 of the enclosure. Auxiliary fan suction inlets 33, 34 and 35 are respectively provided on side walls 22, 23 and 24 of the enclosure. A heat exchanger 12 is provided in the enclosure 20, and a fan 11 is provided in the enclosure 20.

However, AMR cannot provide the benefits available with the invention recited in claims 1 and 21, because AMR is solely directed to a closed system that does not draw in external air, does not guide the external air to the room through the fan, and does not

exchange heat of the external air and room air. As an example, AMR discloses, at FIG. 1 and at col. 2, lines 48-55; col. 3, lines 8-14, that air is drawn from the room through the auxiliary inlets 33, 34 and 35, and discharged to the room again through the outlet 32. Thus, AMR does not draw external air.

Further, AMR does not disclose or suggest “an indoor heat exchanger defining a space therein in communication with a room; a fan in the space that draws air in and that discharges air to the room” (emphasis added), as recited in claim 1 or “an indoor unit, installed in a horizontal surface of a room and defining a space therein in communication with the room, the indoor unit comprising: an indoor heat exchanger; a fan in the space that draws external air in and that discharges external air to the room through the indoor heat exchanger” (emphasis added), as recited in claim 21. As an example, Applicants refer to the fan 20 in a space defined within an indoor heat exchanger 10 of the indoor unit as shown in FIG. 5 of the present specification. In contrast, AMR discloses an indoor heat exchanger 12 that does not define a space therein, or a fan in the space. Further, Applicants submit that there is no motivation in the prior art to modify the indoor heat exchanger 12 to define a space therein (as in claims 1 and 21) and to provide a fan in the space (as in claims 1 and 21).

Further, AMR does not disclose or suggest a “guide apparatus on an underside of the indoor heat exchanger, the guide apparatus guiding external air to the room through the fan and room air from the room”, as recited in claim 1, or a “guide apparatus that

includes a first upper guide, on an underside of the indoor heat exchanger, that guides the external air to the room through the fan, and a lower second guide, on the underside of the indoor heat exchanger, that guides room air from the room", as recited in claim 21. In this regard, it appears that the outstanding Official Action is asserting that the "suction inlet (31)" and the "discharge outlet duct (32)" disclose or suggest the "guide apparatus" recited in claim 21. However, as shown in FIG. 1 of AMR, the elements 31 and 32 are only shown to be openings, and not any sort of apparatus that guides air, let alone external air, to the room.

Further, as acknowledged in the Official Action, AMR does not disclose a preheat exchanger, i.e., a "preheat exchanger arranged adjacent to, and in communication with, the guide apparatus, the preheat exchanger indirectly exchanging heat between external air and room air passing therethrough", as recited in claim 1, or a "preheat exchanger, in communication with the guide apparatus, that indirectly exchanges heat between external air and room air", as recited in claim 21. In this regard, Applicants note that AMR discloses, at col. 2, lines 42-45, that the "fan 11 draws air from the room served, through inlet 31 and through heat exchanger 12, and discharges conditioned air back to the room through outlet 32". As a result of the configuration disclosed in AMR, it appears that a preheat exchanger would not provide any benefit in AMR, and that AMR actually teaches against facilitating any preheat exchange between the air input to the heat exchanger 12 and the air output from the heat exchanger 12. Moreover, AMR teaches that a benefit of its configuration is that 'the

amount of air that is "short circuited" to the inlet 31 will be favorably reduced', i.e., the amount of heated air output from the heat exchanger, that is immediately input again to the heat exchanger, is reduced. Applicants respectfully submit that such a benefit would be eliminated if heat output from the heat exchanger 12 was immediately used to preheat air being input to the heat exchanger 12. In any case, it does not appear that there is a way to provide any preheat exchanger in the indoor unit 10 shown in FIG. 1 of AMR, because the inlet 31 and the outlet 32, as well as the associated airflows, are deliberately isolated from each other on opposite sides of the heat exchanger 12. Accordingly, Applicants respectfully submit that any modifications necessary to provide a preheat exchanger in AMR would be so extensive as to destroy the teachings therein.

Further, there is no disclosure in AMR of an "air supply duct and an air discharge duct respectively connected to the preheat exchanger, for guiding external air to the room and room air from the room", as recited in claim 1, or of an "air supply duct and an air discharge duct, each connected to the preheat exchanger, for supplying the external air to the room and for discharging room air from the room", as recited in claim 21. In this regard, air is introduced directly to the space 20 in AMR through the inlets and outlets 31, 32, 33, 34 and 35. However, there is no disclosure in AMR of any duct for introducing air, let alone a duct that guides external air to the room.

Accordingly, Applicants respectfully submit that AMR fails to disclose or suggest numerous features recited in claims 1 and 21, in addition to those which the outstanding

Official Action acknowledges are lacking in AMR. In particular, AMR fails to disclose any heat exchanger defining a space therein, a fan provided in the space, a first guide, a preheat exchanger or an air supply duct that is used to draw and guide preheated external air to the room. Furthermore, AMR fails to disclose any guide apparatus as in claim 21, i.e., that includes a first guide and a second guide, each on the underside of the indoor heat exchanger.

Applicants further submit that LARSSON fails to remedy the shortcomings of AMR. In particular, the air conditioner of LARSSON is configured to exchange heat between two streams 50 and 52 that are each drawn from an external air stream 32 (see col. 3, lines 18-20). Therefore, LARSSON does not disclose or suggest a “preheat exchanger arranged adjacent to, and in communication with, the guide apparatus, the preheat exchanger indirectly exchanging heat between external air and room air passing therethrough”, as recited in claim 1, or a “preheat exchanger, in communication with the guide apparatus, that indirectly exchanges heat between external air and room air”, as recited in claim 21.

Further, LARSSON does not disclose or suggest an “air supply duct and an air discharge duct respectively connected to the preheat exchanger, for guiding external air to the room and room air from the room”, as recited in claim 1, or an “air supply duct and an air discharge duct, each connected to the preheat exchanger, for supplying the external air to the room and discharging room air from the room”, as recited in claim 21. Rather, LARSSON explicitly discloses that the air in stream 50 is discharged to the room, but no air is drawn from the room and used by a preheat exchanger. Accordingly, the air conditioner in

LARSSON only divides a single air stream, heats one of the resulting air streams and cools the other, and discharges one of the resulting air streams back to the source of the air streams.

In other words, if the source of the air stream in LARSSON is outside air, LARSSON's air conditioner would not draw room air. On the other hand, if the source of the air stream in LARSSON is room air, LARSSON's air conditioner would not draw outside air.

Accordingly, even modification of AMR with the air conditioner of LARSSON would not result in the invention recited in claims 1 and 21. In any case, as noted above, it does not appear that AMR would benefit from modification with the extensive apparatus of LARSSON, particularly because it would appear that the teachings of AMR would be destroyed by such modification. Further, as noted above, even the combination of AMR and LARSSON would not teach at least the numerous features recited in claims 1 and 21 that are set forth above. In particular, the combination of AMR and LARSSON would not result in the air conditioning systems of claims 1 and 21 that include the recited heat exchanger defining a space therein, the fan in the space, the guide apparatus, the preheat exchanger, and/or the air supply duct and an air discharge duct.

Applicants further submit that each of claims 2-16 and 22-36 are allowable over the references applied by the Examiner, at least because each depends, directly or indirectly, from an allowable independent claim, as well as for reasons relating to their own recitations. In any case, Applicants again note with appreciation the Examiner's previous indication of the allowability of the subject matter recited in claims 2-18, if revised to overcome the

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rejections under 35 U.S.C. §112, second paragraph. Applicants further note that claims 22-36 recite subject matter similar to the subject matter recited in claims 2-16.

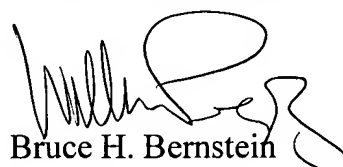
SUMMARY AND CONCLUSION

Accordingly, Applicants respectfully request reconsideration and withdrawal of each of the outstanding objections and rejections. Applicants have added a new set of claims to which recite features similar to the features of the original claim set. Applicants have additionally provided reasons why the combination of references applied in the outstanding Official Action does not disclose, suggest or render obvious the combination of features recited in Applicants' claims.

Any amendments to existing claims, or new claims which have been added in this amendment, which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
Ho Seon CHOI et al.


Bruce H. Bernstein
Reg. No. 29,027

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GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191